CSCI 4020 Compilers Assignment 1
by Calvin Lo (100514352)
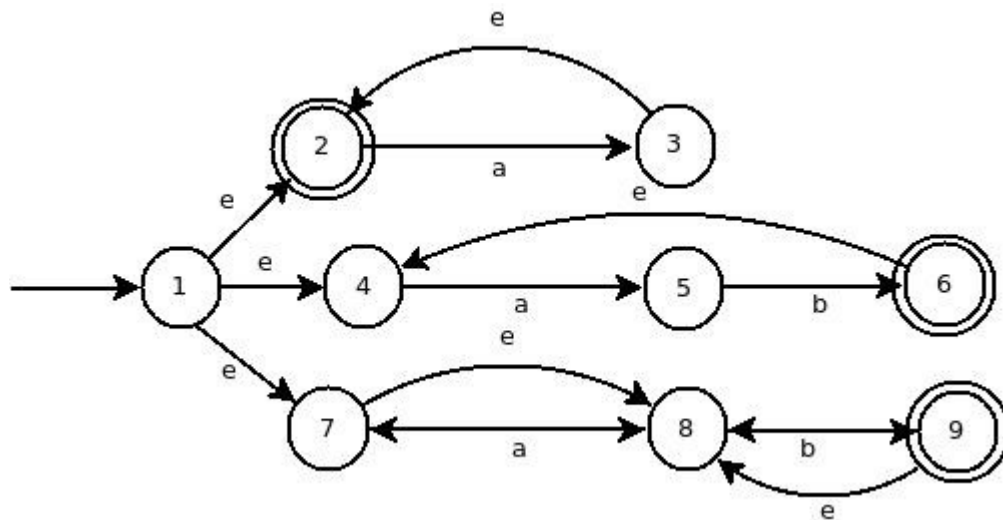
(1.1)
1. $L_1 = \{a\}$, $L_2 = \{b\}$
     $L_1^3 \cdot L_1^* \cdot L_2^*$

2. $L_1 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$, $L_2 = \{\ \}$, $L_3 = \{,\}$
     $L_1^* \cdot (L_2^* \cdot L_3 \cdot L_1^*)$

3. $L_1 = \{a, b\}$
     L_1^4

(1.2)
1.   {aaaa*b*}
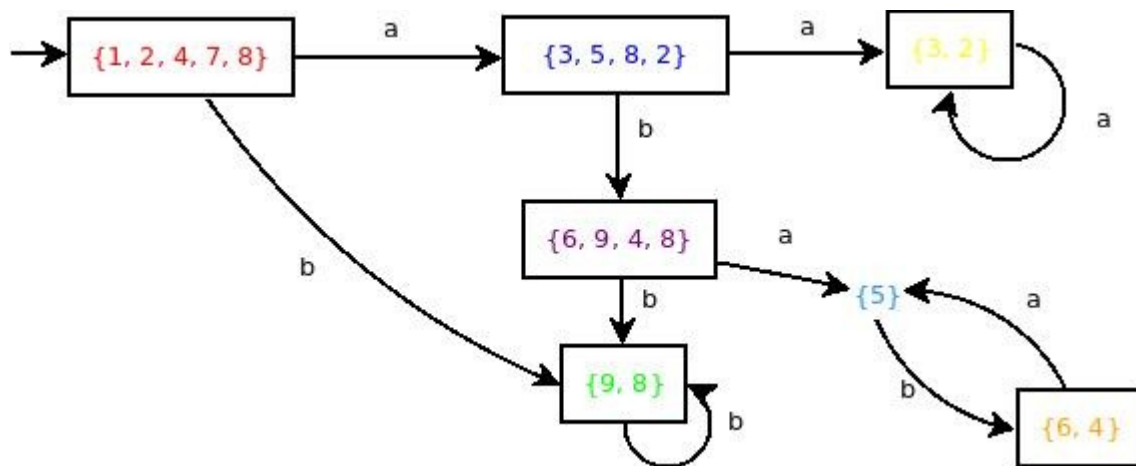2.   {[0-9]*(\s?,\s? [0-9]*)}
3.   {(a | b)(a | b)(a | b) (a | b)}

(1.3) NFA

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(1.4) NFA to DFA

{1, 2, 4, 7, 8} F	a ⟶ {3, 5, 8, 2} b ⟶ {9, 8}
{3, 5, 8, 2} F	a ⟶ {3, 2} b ⟶ {6, 9, 4, 8}
{3, 2} F	a ⟶ {3, 2} b ⟶ {}
{6 , 9 ,4, 8} F	a ⟶ {5} b ⟶ {9, 8}
{9, 8} F	a ⟶ {} b ⟶ {9, 8}
{5}	a ⟶ {} b ⟶ {6, 4}
{6, 4} F	a ⟶ {5} b ⟶ {}

Notes: For the DFA file in question (2.2),

{1, 2, 4, 7, 8} = 1
{3, 5, 8, 2} = 2
{3, 2} = 4
{6 , 9 ,4, 8} = 5
{9, 8} = 6
{5} = 7
{6, 4} = 8